DOCUMENT RESUME

ED 361 086 PS 021 596

TITLE	Feeding Infants: A Guide for Use in the Child Care Food Program.
INSTITUTION	Food and Nutrition Service (DOA), Washington, D.C.
REPORT NO	FNS-258
PUB DATE	Dec 88
NOTE	53p.
PUB TYPE	Guides - Non-Classroom Use (055)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Child Caregivers; Child Health; *Day Care Centers; Eating Habits; *Food; *Food Service; Hygiene; Individual Development; *Infants; *Nutrition; Preschool Education
IDENTIFIERS	*Child Care Food Program; Feeding Skills; Food Preparation; Food Selection; *Infant Feeding; Meal Programs; Meal Requirements; Menu Planning

ABSTRACT

Developed for use by staff participating in the Child Care Food Program (CCFP), this guide presents information on infant development, infant nutrition, safe food handling, and infant meal pattern requirements. The guide has an easy-to-read reference, covering general feeding issues as well as specifics of the CCFP infant meal pattern. All foods included in the infant meal pattern are discussed in detail, and are grouped according to the method of feeding: feeding by bottle, feeding of solid foods, and drinking from a cup. The guide includes a bibliography of 13 items and an appendix of handouts. All figures and handouts in the guide can be easily reproduced to distribute to family day care home providers, parents, or others who are responsible for feeding infants. (MM)

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United States Department of Agriculture

Food and Nutrition Service

FNS-258

Feeding Infants

A Guide for Use in the Child Care Food Program

ED 361 086

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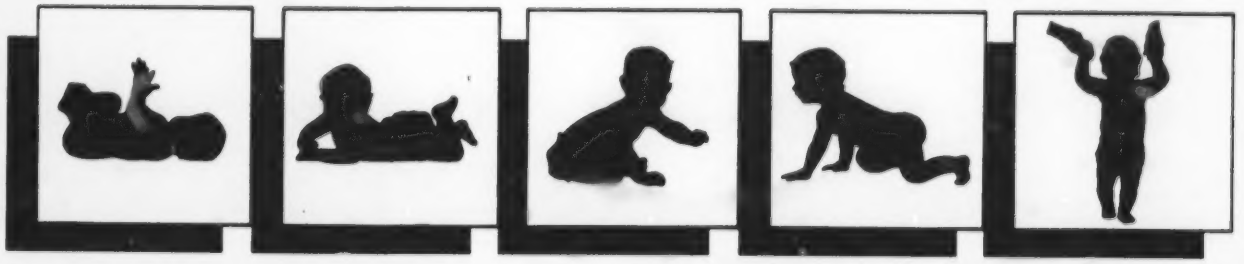

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Acknowledgments

The following persons were responsible for the preparation of this guide:
Anne Jacobs Molofsky, M.S., R.D., Nutrition and Technical Services Division, prepared this guide. Beverly Westmoreland provided editorial assistance, and Tracy Brown was responsible for the word processing and format.

We would like to thank the many individuals who reviewed the drafts of the publication and provided valuable comments.

We especially appreciate the generous assistance of Ellyn Satter in reviewing the publication and for granting permission to use material from her book, *Child of Mine: Feeding with Love and Good Sense*, in the development of this publication.

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December 1988

Note to the Reader On Using This Guide

This guide is for use by staff who care for and feed infants and who participate in the Child Care Food Program (CCFP). It presents information on infant development, infant nutrition, safe food handling, and the infant meal pattern requirements to help you meet the challenge of feeding the infants under your care.

This guide has been developed as an easy-to-read reference, covering both general feeding issues as well as specifics of the CCFP infant meal pattern. All foods included in the infant meal pattern are discussed in detail. The foods are grouped according to the method of feeding: Feeding by Bottle, Feeding of Solid Foods, and Drinking From a Cup.

The guide was designed to help you disseminate information on infant feeding. The appendix contains handouts that can be easily reproduced. Also, all of the figures have been designed to be reproduced and used as handouts. We encourage you to use these handouts as part of training sessions or to post them where they can be referred to easily. You may also distribute them to family day care home providers, parents, or others who are responsible for feeding infants.

We are interested in your comments on this guide. Please help us by completing the Reader Response on the last page.

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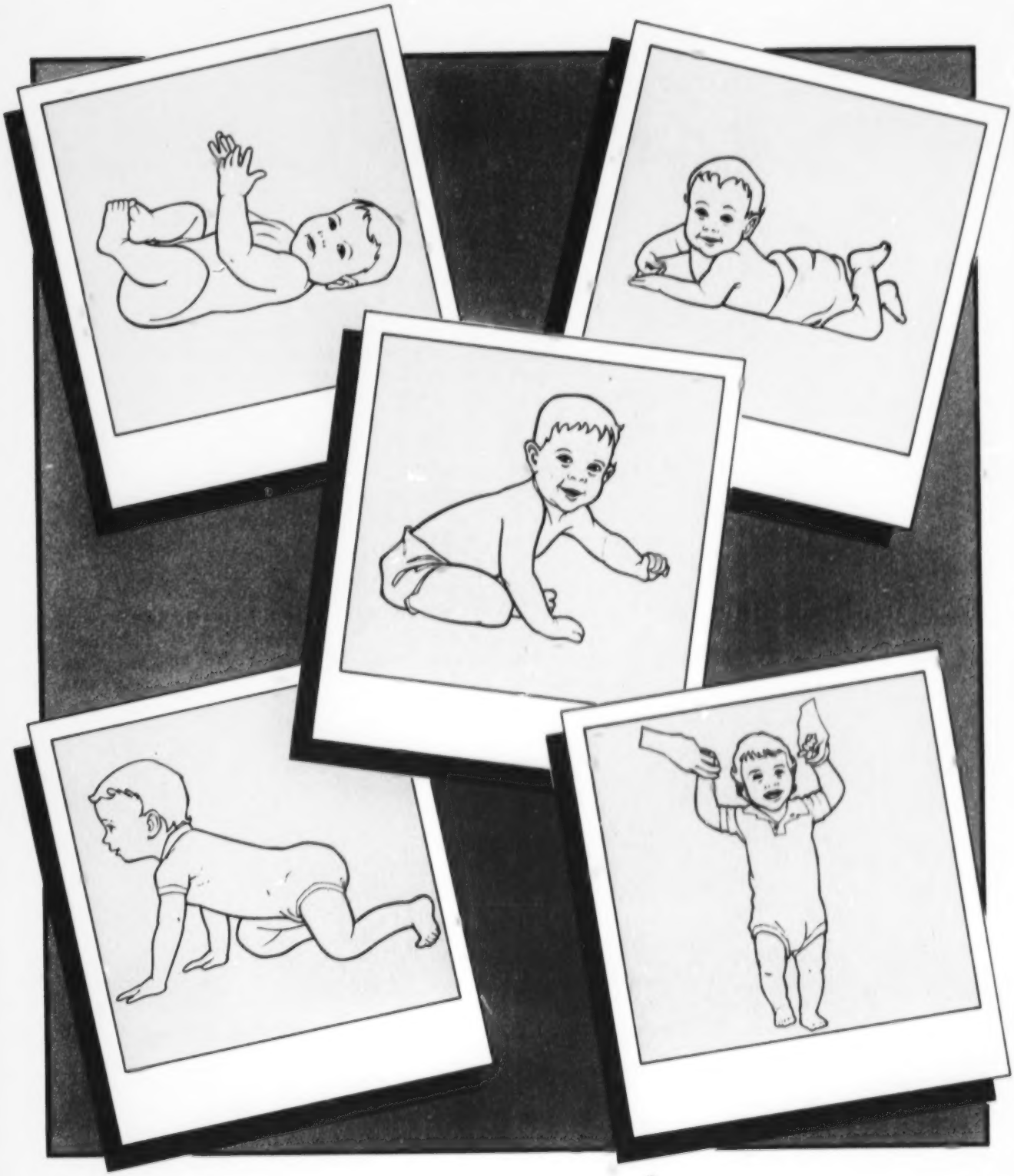
Introduction

Good nutrition is essential to the rapid growth and development that occurs during a baby's first year. Providing babies with the right foods will promote good health and give them the opportunity to enjoy new tastes and textures as they establish good eating habits. Also, feeding can help babies establish warm relationships. Positive and supportive feeding techniques are essential in allowing babies to eat well and to develop healthy attitudes toward themselves and others.

During the first year, babies' mouths develop from being able only to suck and swallow to being able to chew. Also, their digestive tracts mature from being able to take in only liquids, such as breast milk or formula, to being able to receive a wide variety of foods. And at the same time, they progress from needing to be fed toward feeding themselves. As babies continually mature, their food and feeding patterns must continually change.

This guide will help you appropriately feed the babies in your program as they change and develop. It answers some of the common questions on infant nutrition, infant feeding practices, food preparation, safety, and sanitation.

The parents will also give you important information to help you in feeding their babies. You should communicate frequently with the parents so that you can coordinate what the babies are being fed while in child care with what they are fed at home. In this way you can assure the best care for the babies.



Infant Development and Feeding Skills

A baby's developmental readiness determines which foods should be fed, what texture the foods should be, and which feeding styles to use. All babies develop at their own rate. Although age and size often correspond with developmental readiness, these should not be used as sole considerations for deciding what and how to feed babies. It is important to be aware of their rapidly developing mouth patterns and hand and body control so that you know the appropriate food and texture to serve the babies and the appropriate feeding style to use at each stage of their development.

Figure 1 summarizes the development of a baby's mouth patterns and hand and body control and how these affect both the baby's ability to eat foods of different textures and how the food is fed. The ability of newborn babies to only suck and swallow liquids is due to their limited level of development. As babies mature, they are able to begin learning to eat strained solid foods from a spoon. Eventually they are able to feed themselves small chunks of cooked foods by hand and later by spoon.

The rate at which the baby progresses to each new food texture and feeding style is determined by the baby's own skills and attitudes. Some babies are cautious, others venturesome. Babies always do better if they are supported in progressing at their own rate. As shown in figure 1, there is an overlap of ages to allow for differences in development.

Figure 1:

Sequence of Infant Development and Feeding Skills

Baby's Approximate Age	Developmental Skills		
	Mouth Patterns	Hand and Body Control	Baby Can:
Birth through 5 months	• Sucking/swallowing reflex • Tongue thrust reflex • Poor lip closure	• Poor control of head, neck, trunk	• Swallow liquids but pushes most solid objects from the mouth
4 months through 6 months	• Draws in lower lip as spoon is removed from mouth • Up and down movement • Immediately transfers food from front to back of tongue to swallow	• Sits with support • Good head control • Uses whole hand to grasp objects (palmer grasp)	• Take in a spoonful of pureed or strained food and swallow it without choking • Control the position of food in the mouth
5 months through 9 months	• Up-and-down munching movement • Positions food between jaws for chewing	• Begins to sit alone unsupported • Begins to use thumb and index finger to pick up objects (pincer grasp)	• Begin to eat mashed foods • Eat from a spoon easily
8 months through 11 months	• Complete side-to-side tongue movement • Begins to curve lips around rim of cup	• Sits alone easily	• Begin to eat ground or finely chopped food • Begin to feed self with hands • Drink from a cup
10 months through 11 months	• Rotary chewing (grinding)	• Begins to put spoon in mouth • Begins to hold cup	• Eat chopped food and small pieces of soft, cooked table food

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Child Care Food Program Infant Meal Pattern

Figure 2 shows the types and amounts of foods which meet the infant meal pattern for the Child Care Food Program. The first year of life, from birth until the baby's first birthday, is divided into three equal age groups, each consisting of 4 months. Although the infant meal pattern specifies breakfast, lunch, supper, and snack, this may be inconsistent with a baby's feeding pattern. Meals are specified as a guideline only. Young babies, under 6 months of age, usually will not comply with rigid schedules and may need to eat every 2 to 4 hours. Some older babies also will need to eat more frequently than the specified feedings. Babies should be fed when they are hungry and not restricted to a rigid schedule.

There are ranges given for each food portion in the meal pattern to allow for flexibility in how much food is served to the baby based on its appetite. Babies will vary day-to-day in the amounts they eat. The amounts listed are the **minimum** portions you must serve to meet the requirements. Some babies will want more than these amounts. You may serve larger portions and additional foods to those babies. For example, a 3-month-old baby may be fed more than 6 ounces of formula or breast milk at a feeding or an 8-month-old baby may be fed an additional food such as bread at breakfast, lunch, or supper.

Figure 2:

The Child Care Food Program Infant Meal Pattern

Age of Baby by Month	Breakfast	Lunch and Supper	Snack
Birth through 3 months	4-6 fluid ounces (fl oz) breast milk[1] or formula[2]	4-6 fl oz breast milk[1] or formula[2]	4-6 fl oz. breast milk[1] or formula[2]
4 months through 7 months	4-8 fl oz breast milk[1] or formula[2] 0-3 tablespoons (tbsp.) infant cereal[3] (optional)	4-8 fl oz breast milk[1] or formula[2] 0-3 tbsp. infant cereal[3] (optional) 0-3 tbsp. fruit and/or vegetable (optional)	4-6 fl oz breast milk[1] or formula[2]
8 months through 11 months	6-8 fl oz breast milk, formula[2], or whole milk 2-4 tbsp. infant cereal[3] 1-4 tbsp. fruit and/or vegetable	6-8 fl oz breast milk, formula[2], or whole milk 2-4 tbsp. infant cereal[3] ***and/or*** 1-4 tbsp. meat, fish, poultry, egg yolk, or cooked dry beans or peas, ***or*** ½-2 oz cheese, ***or*** 1-4 oz cottage cheese, cheese food, or cheese spread 1-4 tbsp. fruit and/or vegetable	2-4 fl oz breast milk, formula[2], whole milk, or fruit juice[4] 0-½ slice bread or 0-2 crackers[5] (optional)

[1] Meals containing only breast milk are not reimbursable

[2] Iron-fortified infant formula

[3] Iron-fortified dry infant cereal

[4] Full-strength fruit juice

[5] Made from whole-grain or enriched meal or flour

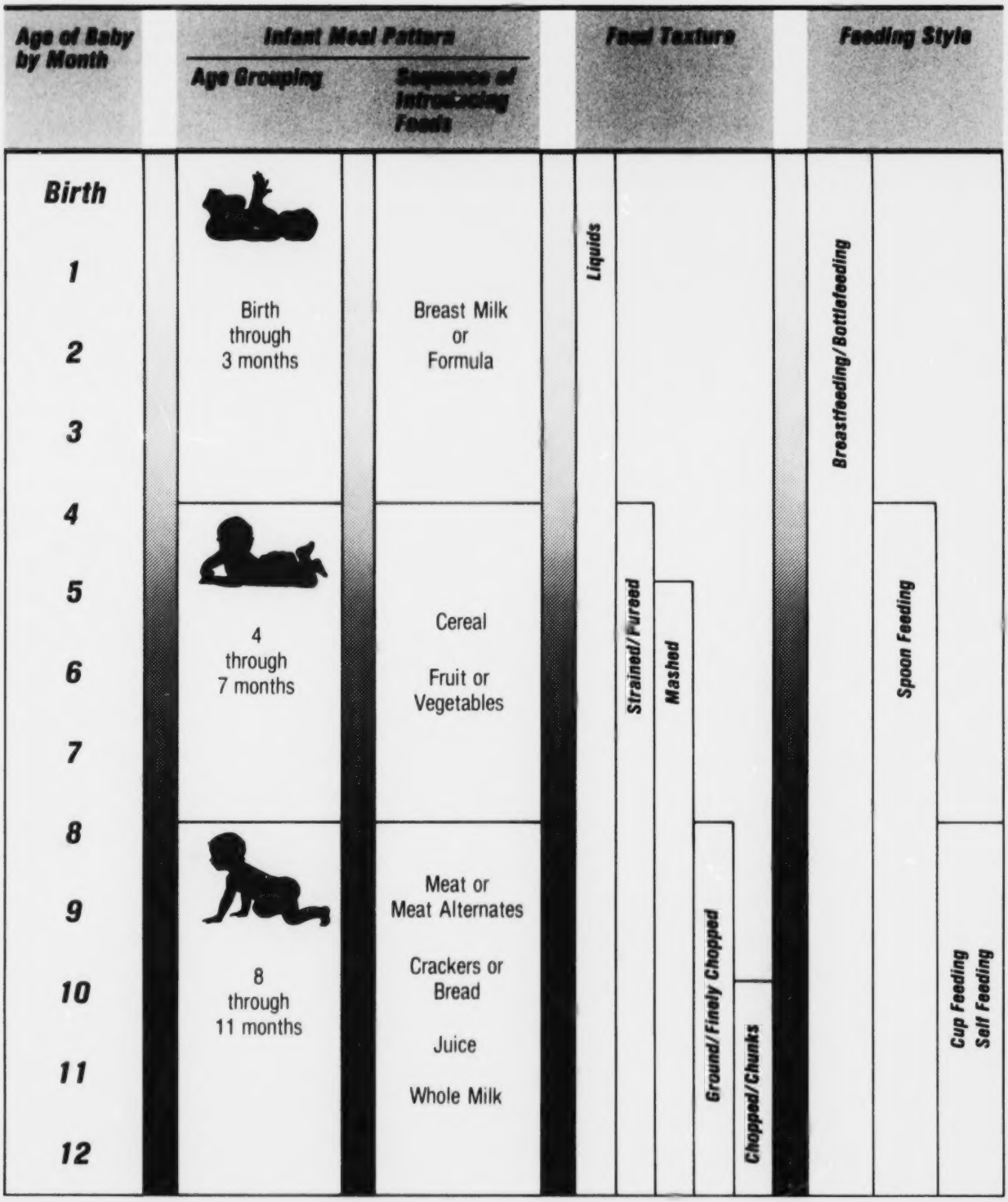
Other babies may want less than the portions listed here. Never force babies to finish what is in the bottle or what is fed by spoon. Let babies determine how much they eat. Babies will let you know if they are hungry by opening their mouths and leaning forward. They will let you know if they have had enough to eat by pulling away from the bottle or spoon, turning their heads away, playing with the food, sealing their lips, or pushing the nipple or food out of their mouths. Babies may want to eat less if they are teething or not feeling well and more if they are going through a growth spurt.

In the meal pattern, the portions for solid foods are listed as 0 to 3 tablespoons in the 4- through 7-month age group. Solid foods are optional in this age group and should only be served when babies are developmentally ready for them and interested in learning to eat them. However, the decision to introduce solid foods should be made in consultation with the parents. The age to introduce solid foods is likely to be the area of greatest discrepancy between the child care provider and parents. Some parents start serving solid foods before their baby is developmentally ready; others wait beyond the time of developmental readiness. It is important to let the parents make the decision when to introduce solid foods.

Figure 3 illustrates how the infant meal pattern corresponds with the changes in food texture and feeding style during the baby's first year of life. Flexibility is provided to allow for the differences in each baby's development. For example, one 6-month-old may be eating infant cereal and strained and mashed fruits and vegetables while another 6-month-old is being introduced to infant cereal and may not be eating mashed foods until 8 or 9 months of age. Remember that all babies progress at their own rate.

Figure 3:

How the Infant Meal Pattern Corresponds with Food Textures and Feeding Styles



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Feeding by Bottle

Unless the baby's doctor recommends otherwise, it is best to wait to introduce whole milk until after the baby's first birthday. Using either expressed breast milk or iron-fortified infant formula to meet the infant meal pattern requirements is discussed below and how to bottlefeed is summarized in figure 4. See pages 25-27 for a full explanation of when and how to introduce whole milk.

Breast Milk

Breast milk is the optimal food for babies. It is the only food a baby needs during at least the first 4 to 6 months of life, and it continues to be an important source of nutrients for the first year. Mothers who are breastfeeding their babies should be encouraged to continue to breastfeed when returning to work, if they desire to do so. Babies who are breastfed may:

- be bottlefed expressed breast milk while at day care,
- be breastfed by their mothers at the day care site, or
- receive infant formula while at day care.

To help the breastfeeding mother:

- Do not feed the baby, either breast milk or formula, for 1 to 1-1/2 hours before she is expected to return so that the baby is ready to nurse when she arrives, and
- Offer her a quiet place, if possible, to nurse her baby when she comes.

Meals containing only breast milk are not reimbursable for babies from birth through 3 months of age. Meals containing breast milk are reimbursable for babies 4 months of age and older if the other meal component or components (for example, infant cereal) are served to the baby. Be careful not to introduce solid foods to babies before they are developmentally ready. Solid foods are not required for reimbursement until 8 months of age, and they should only be served with the parents' consent. Some babies may be ready for solids at 4 months of age, and others may not be ready until they are 6 or 7 months old.

Iron-Fortified Infant Formula

Iron-fortified infant formula is the best food for the baby when the baby is not being breastfed or when a supplement to breastfeeding is needed. Commercially prepared iron-fortified infant formula is specially formulated to have the right balance of nutrients and to be easily digested by the baby. For a baby who is not breastfed, iron-fortified infant formula is the only food a baby needs for at least the first 4 to 6 months of life, and it continues to be an important source of nutrients for the baby's first year.

Make sure the formula label says "with iron" or "iron-fortified." Formula labels which say "low iron" do not meet the meal pattern. They may be served only as a dietary substitute which requires a note from a medical doctor or other recognized medical authority. Iron is a very important nutrient during the baby's first year, and serving iron-fortified infant formula is the easiest way to ensure adequate intake of iron. Some people may avoid iron-fortified formula because they are concerned that the iron causes stomach aches and intestinal problems, but these occur very infrequently.

Babies over 6 months of age should not receive more than 1 quart (32 ounces) of formula in a day. If babies are still hungry, they may require solid foods instead of more formula.

Baby Bottle Tooth Decay

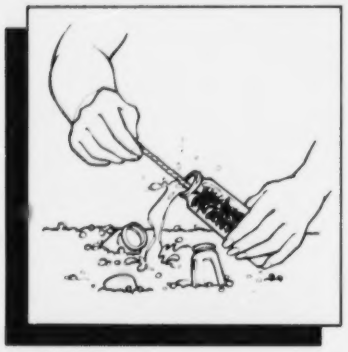
Baby bottle tooth decay, also called nursing bottle caries, can occur when babies with teeth are regularly allowed to fall asleep with their bottles in their mouths. The production of saliva decreases when the baby falls asleep, and the teeth are not cleansed properly. The sugar in the milk or juice can cause serious tooth decay. To prevent baby bottle tooth decay:

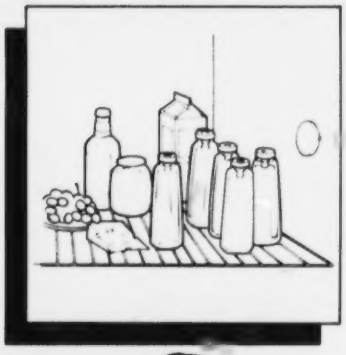
- Feed only formula, breast milk, milk, or water from a bottle.
- Offer the bottle only at feeding time, not at nap time. If a baby falls asleep during feeding, move the baby around a bit to stimulate swallowing before putting the baby down to sleep.
- Never put water sweetened with honey, sugar, or corn syrup; fruit juice; soda pop; sweetened iced tea; or other sweetened drinks in the bottle. Use only plain sterile water if the baby seems thirsty or has a decreased number of wet diapers.
- Do not use a bottle of cold juice to soothe a teething baby's gums. Instead, offer a clean favorite rattle or teething ring that has been cooled in the refrigerator.
- Provide juice in a cup.
- Omit bottlefeedings, one at a time, between 8 and 12 months of age as the baby consumes more solid foods and drinks liquids from a cup.

Figure 4 summarizes how to prepare and store bottles and how to bottlefeed the baby.

Figure 4:

Basic Principles for Bottlefeeding





Preparing and Storing Bottles:

- Ensure that bottlefeeding is sanitary.
- Do not allow bottles of breast milk or formula to stand at room temperature to prevent spoilage. Refrigerate prepared bottles until ready to use.
- Always test the temperature of the liquid before feeding to make sure it is not too hot or too cold. For those babies who prefer a warm bottle, warm the bottle immediately before feeding. Shake the bottle well before testing temperature.
- Shake the bottle of breast milk before feeding to the baby because breast milk separates when it is stored.
- Never use a microwave oven to heat the bottles because the bottles may explode or the milk may get too hot. Since the liquid heats unevenly, it can be much hotter than it feels.
- Never put cereal or other solids in a bottle since this can be a form of force-feeding.
- Discard any unused breast milk or formula left in a bottle and rinse the bottle in cool water to remove breast milk or formula. Never refrigerate or reheat a bottle after the baby has nursed from it. This increases the chances of contamination.

Feeding the Baby:

- Feed when the baby indicates hunger. Respond to the early signs of hunger. Do not wait until the baby is upset or crying from hunger.
- Work gently and slowly to calm and organize the baby to get ready for feeding.
- Feed in a smooth and continuous fashion following the baby's preference for timing, speed, and amounts. Avoid disrupting the feeding with unnecessary burping, wiping, juggling, and arranging.
- Always hold the young baby during feedings. Tip the bottle so that milk fills the nipple and air does not get in. Propping a bottle can cause ear infections and choking, and it deprives the baby of important cuddling and human contact.
- Hold the baby's head a little higher than the rest of the body to prevent milk from backing up in the inner ear and causing an ear infection.
- Do not offer the bottle at nap time. Allowing a baby with teeth to go to sleep with a bottle may lead to baby bottle tooth decay.
- Wait for the baby to stop eating before burping. Burp by gently patting or rubbing the baby's back while the baby is resting on your shoulder or sitting on your lap. Do not be surprised if the baby brings up some milk along with the swallowed air or if the baby does not burp.
- Continue to feed until the baby indicates it's full. Signs of fullness include sealing the lips, absence of a suckle reflex, and spitting out the nipple.
- Never force a baby to finish what is in the bottle. Babies are the best judge of how much they need.
- Omit bottlefeedings, one at a time, between 8 and 12 months as the baby fills up on solid foods and drinks liquids from a cup.

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Feeding of Solid Foods

During the first 4 to 6 months, a baby requires only breast milk or iron-fortified infant formula. Babies' swallowing systems are not developmentally ready to handle semisolid foods until they are between 4 to 6 months of age. During that period the tongue thrust reflex, which causes the tongue to push most solid objects out of the mouth, disappears. Also, during that time babies begin to show their desire for food by opening their mouths and leaning forward, and they show disinterest or fullness by leaning back, turning away, and pushing the bottle or spoon away.

Babies are ready for semisolid foods when they can:

- hold their necks steady and sit with support,
- draw in their lower lips as a spoon is removed from their mouths, and
- keep food in their mouths and swallow it rather than pushing it back out on their chins.

These are signals that the baby is mature enough to begin learning to eat from a spoon. The babies' weights or ages alone do not determine their readiness for semisolid foods. Each baby develops at a different rate.

Good communication between you and the parents is essential when introducing semisolid foods. The decision to introduce these foods should be made in consultation with the parents. Continue to consult with each baby's parents concerning which foods they have introduced. In doing so, you will be able to follow the parents' schedule of introducing new foods and also be able to more easily identify food allergies or intolerances. Consistency between home and the child care setting is essential during the period of rapid change when babies are learning to eat solid foods.

In addition to coordinating with parents, you can make it easier to identify food allergies or intolerances by introducing one new food at a time. Wait 1 week before adding a new food. If there is a reaction, discontinue the food.

Babies' development does not always match their chronological age. Babies may be developmentally delayed in their feeding skills due to:

- prematurity,
- multiple hospitalizations,
- low birth weight,
- depression, or
- failure to thrive.

Those babies who are developmentally delayed should have instructions from their physicians concerning proper feeding.

If babies are fed solid foods before they are ready for them, several problems may occur. They may:

- choke on the food,
- develop food allergies, and
- consume less breast milk or formula and not get an appropriate balance of nutrients.

Feeding solid foods early will **not** help babies sleep through the night or eat fewer times in a day.

Introducing New Foods

Iron-Fortified Infant Cereal

Iron-fortified infant rice cereal is a good choice for baby's first solid food because it:

- is easily digested,
- is least likely to cause an allergic reaction,
- contains important nutrients, and
- can be altered in texture to meet the developmental needs of the baby.

Dry-pack infant rice cereal can be prepared with expressed breast milk or infant formula to produce a smooth semiliquid which is easy for a young baby to swallow and digest. The consistency of all cereals can be thickened by adding less liquid as the baby matures. Measure the dry cereal before adding the liquid.

Oat and barley infant cereal can be added at 1-week intervals. Do not serve wheat cereal to babies before they are 8 or 9 months old because it is the most common grain to cause an intolerance. The risk of intolerance decreases by age 8 to 9 months. Mixed-grain cereals may be served after the baby has been introduced to each grain separately. Cereal and fruit combinations should be avoided because it is too difficult to determine how much of each component is contained in the food product.

Adult cereals should not be served to babies before they are 8 or 9 months old because these cereals often contain mixed grains and are high in salt and sugar. After they are 8 or 9 months old, adult cereals may be served to babies as an additional food as long as all the required foods are also served.

Fruits and Vegetables

Fruits and vegetables may be introduced when the baby is readily accepting 2 to 3 tablespoons of infant cereal at each meal. Consult with the parents about which fruits and vegetables are being introduced at home so that you can serve the same food at the same time.

When introducing fruits and vegetables to babies 4 to 8 months old use commercially prepared baby food available in jars or as dehydrated flakes. Serve these babies a wide variety of mild-tasting fruits and vegetables such as applesauce, apricots, bananas, peaches, pears, plums, green beans, green peas, squash, and sweet potatoes.

Older babies between 6 and 12 months of age may be served almost any **soft-cooked** fruit or vegetable as long as the texture is appropriately modified. As babies' mouth skills progress, gradually increase the thickness and lumpiness of fruits and vegetables. Use cooked, fresh, or frozen fruits or vegetables, and progress from pureed to ground to fork mashed and eventually to diced. Or you may purchase baby foods that progress in texture. Ripe bananas do not need cooking. Avoid canned fruits or vegetables that are high in added sugar or salt. Also, do not add salt, sugar, fat, spices, and other seasonings to fruits and vegetables.

Meat and Meat Alternates

Meat and meat alternates can be offered to babies starting at 8 months of age. At that age babies will have already been introduced to cereals, fruits, and vegetables and will be ready for new foods and other sources of iron. Offer well-cooked strained or pureed lean beef, pork, lamb, veal, chicken, turkey, liver, boneless fish, egg yolk, pureed dry beans and peas, diced or grated mild cheese, or cottage cheese. As the baby's feeding skills mature, meat can be served ground or finely chopped, and cheese can be cut into larger chunks. Do not add fat, salt, seasonings, or spices to meat and meat alternates.

If you are using commercial baby food, choose plain meats rather than the mixed vegetable and meat dinners because the mixed dinners do not contain as much protein and iron as the plain meats. It is difficult to know how much of each component is in the mixture. You may mix the plain meats with vegetables after measuring to serve to the baby because some babies will accept meat better when mixed.

Bread and Crackers
Bread or crackers may be served at the snack at the discretion of the caregiver. At 8 or 9 months of age, babies enjoy having finger foods so they can practice picking up the foods. Also, at that age a baby's risk of intolerance to wheat decreases. Serve babies strips of dry bread or toast and crackers. Babies who are teething will welcome these foods. Check the food label to make sure they are made from whole-grain or enriched meal or flour. Choose plain crackers such as soda crackers, preferably low in salt, or graham crackers. Do not serve babies highly seasoned snack crackers or those with seeds.

Other Foods
Other foods which are not listed in the infant meal pattern chart may be served although they do not count as part of the meal requirements. They are in addition to all the foods listed in the meal pattern and may not substitute for any of the required food. Some examples are rice, noodles, or bread at breakfast, lunch, or supper or fruits and vegetables at the snack. Remember to serve foods that are appropriate to a baby's developmental age. For example, peanut butter is not included in the infant meal pattern because of its association with choking. It is not recommended until the baby is 1 year old. Macaroni and noodles are not included in the infant meal pattern, but they may be appropriate for babies beginning at 8 months of age. Also, pieces of cooked fruit or vegetable may be appropriate as a finger food at the snack for babies 8 months of age or older.

Figure 5 summarizes how to introduce semisolid foods, how to feed solid foods, and which foods to avoid.

Figure 5:

Basic Principles for Feeding Solid Foods

Introducing Semisolid Foods:

- Introduce semisolid foods only when babies are developmentally ready and after consultation with the parents.
- Coordinate with each baby's parents so that you are introducing the same new foods and textures at the same time.
- Feed babies some breast milk or formula before the semisolid foods so they are not too hungry. Hungry babies may become very impatient with spoon feeding.
- Sit directly in front of the baby to encourage the baby. Offer the spoon. Wait for the baby's mouth to open before attempting to feed.
- To begin feeding semisolid foods, use a small spoon and place a tiny amount of food between the babies' lips. At first they will force much of it out of their mouths, but gradually they will learn to move the food to the back of their mouths for swallowing.
- When solid foods are first introduced, serve them at only one meal to help the baby gradually adjust to this new method of eating.
- Introduce new foods gradually. Wait a week between introducing new foods so that you can watch for allergic or intolerance reactions (diarrhea, rashes, nausea, vomiting, coughing, general irritability, or hives). Realize food acceptance increases with exposure. After repeated tastes and no pressure, babies will often accept foods they initially rejected.
- Never put cereal or any other solid in a bottle or infant feeder. Solid foods should be fed to babies with a spoon. If babies are not ready to eat from a spoon they are not ready to eat solid foods, and putting solids in a bottle is a form of force-feeding.

General Tips:

- After a gradual introduction, serve a variety of each type of food.
- Never force the baby to finish the serving. Feed until the baby indicates fullness by not opening mouth, pulling away from the spoon, turning away, or pushing food back out of the mouth. Babies are the best judge of how much food they need, and they should be allowed to determine how much they eat.
- Be calm and friendly but not overwhelming. Follow the baby's lead on speed, food preferences, and amount.
- Avoid adding salt, sugar, spices, seasonings, or fat in all foods. Babies do not need these ingredients, and spices and seasonings may irritate their digestive systems.
- Test the temperature of foods before feeding them to the baby to make sure they are not too hot.
- Begin to offer infant formula or breast milk from a cup. Babies will consume less formula or milk from the bottle as their intake of solids and drinking from a cup increases. Eventually, they lose interest in their aftermeal bottle and it can be quietly discontinued.
- Offer sterile water in a bottle or a cup during the day since additional water is often required when solids are introduced.
- Modify the texture of the food so that it is appropriate for the baby's stage of development. Providing new textures encourages the baby's further development.

Foods to Avoid:

- Do not give raw fruits (except ripe bananas) and vegetables to babies because they may cause choking and be difficult for them to digest.
- Do not give citrus fruits, egg white, shellfish, and chocolate to a baby before 1 year of age because these foods may cause allergic reactions.
- Never give honey, including sources used in cooking or baking (such as in honey graham crackers) to babies. Honey is sometimes contaminated with Clostridium botulinum spores. If these spores are ingested by a baby, they can produce a toxin which may cause a type of foodborne illness called infant botulism.

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Drinking From a Cup

Babies are usually ready to drink from a cup when they can sit alone and when they can curve their lips around the rim of a cup. You can help the baby drink from a cup by introducing small amounts of juice, infant formula, breast milk, or water in a cup. You can help minimize spills by offering babies a cup with a spout, lid, and two handles.

Fruit Juice

Fruit juice may be served to babies when they are ready to drink from a cup. Choose a juice that is fortified with vitamin C, such as commercially prepared apple juice for babies. Avoid orange and grapefruit juice because they are more likely to cause an allergic reaction. Make sure that you buy 100 percent fruit juice. Never use fruit drink and fruit punch that contain added sugar because they are very high in sugar and contain fewer nutrients. Also, avoid bottlefeeding sweetened drinks and fruit juice because that increases the risk of developing tooth decay. When using juice for a snack, measure 2 to 4 ounces of juice. You may dilute the juice with an equal amount of water. Limit the total juice given to a baby to 4 to 6 ounces per day because too much juice can spoil the baby's appetite for other nutritious food.

Whole Milk

Whole milk is a poor source of iron and vitamin C, unlike breast milk and iron-fortified infant formula which contain adequate amounts of these nutrients. Although whole milk may be served to babies 8 months of age and older when they are well established on table food, it is recommended that either breast milk or iron-fortified infant formula be served for the entire first year to assure adequate iron intake. The decision to introduce whole milk should be made in consultation with the parents. Extra care must be given to planning meals when whole milk is served to provide all the nutrients babies need. Skim milk or lowfat milk should not be served to babies under 1 year of age because they contain too little fat and too much protein.

Before serving whole milk, babies must be consuming one-third of their dietary calories from a balanced mixture of cereals, fruits, vegetables, and other foods that assure adequate sources of iron and vitamin C. This nutritional requirement can be met by the baby consuming at least the following over a day's period:

- 6 tbsp. iron-fortified infant cereal,
- 8 tbsp. fruit and/or vegetable high in vitamin C (approximately one 4-1/2 oz jar of commercially prepared vitamin C fortified baby food), and
- 4 tbsp. meat or meat alternate high in iron.

In addition to the above, when whole milk is served, babies should receive:

- 4 ounces of sterile water twice a day, and
- 2-4 ounces of vitiamin C fortified infant fruit juice at the snack.

The following foods are high in vitamin C and iron and are appropriate for the baby 8 months of age and older.

Foods High in Vitamin C and Iron to Include When Serving Whole Milk

Foods High in Vitamin C:

- Fruits and Vegetables
  - Asparagus
  - Broccoli
  - Brussel sprouts
  - Cabbage
  - Cauliflower
  - Cantaloupe
  - Commercially prepared vitamin C-fortified strained baby fruits
  - Honeydew melon
  - Kohlrabi
  - Mango
  - Papaya
  - Peppers
  - Potato
  - Spinach
  - Strawberries
  - Sweet potatoes
- Infant Fruit Juice Fortified with Vitamin C

Foods High in Iron:

- Meat and Meat Alternates
  - Meat
  - Poultry
  - Liver
  - Egg yolk
  - Cooked dry beans and peas
- Iron-Fortified Infant Cereal

When you serve whole milk to a baby, you should begin by introducing it gradually so that the baby can get used to the taste. You may do this by mixing part milk and part infant formula at a particular feeding and gradually increasing the amount of milk.

Babies over 6 months of age should not receive more than 1 quart (32 ounces) of formula or whole milk in a day.

Between 8 and 12 months of age, the baby shifts from depending on breast milk or formula as the primary nutrient source to depending on a mixed diet of solid foods with breast milk, formula, or milk as a supplement. Therefore, the consumption of milk should decrease as the consumption of solids increases.

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Sanitation, Food Preparation, and Safe Food Handling

Babies are more susceptible to bacteria than older children, and unsanitary food conditions can cause serious infections. Take extra care when handling their food, bottles, and utensils to make sure they are safe and clean. Remember to thoroughly wash your hands with warm soapy water before handling any food or bottles.

Babies are at a high risk of choking on food due to their poor chewing and swallowing abilities. It is therefore important to serve foods that are modified appropriately and to keep mealtimes calm.

Hand Washing

Proper handwashing can help prevent the spread of illness in child care settings. In addition to washing your hands before preparing babies' food and bottles, remember to wash your hands after changing each baby's diaper and clothing.

When washing your hands:

- Wet your hands with warm water,
- Add soap,
- Wash all surfaces,
- Rinse your hands well with warm water, and
- Dry your hands with a clean towel.

Bottle Preparation

Purchasing Formula:

- Select ready-to-feed formula because it is the most convenient and sanitary. If you use dry powdered or liquid concentrate, the formula must be mixed very carefully according to directions on the container. Underdiluted formula (containing too little water) puts an excessive burden on the baby's kidneys and digestive system and may lead to dehydration. Overdiluted formula (containing too much water) may interfere with the baby's proper growth because it does not contain adequate calories and nutrients. Use either milk-based or soy-based formulas.
- Make sure the label says "with iron" or "iron-fortified."
- Do not purchase cans of infant formula that have dents, bulges, or rust spots.
- Check the formula's expiration date on the lid or label to make sure the product is not too old.

Preparing Formula:

- Wash your hands with soap and water.
- Wash all equipment (nipples, bottles, rings, and caps) in hot soapy water and scrub with a brush.
- Rinse all equipment well in hot water.
- Put nipples, bottles, rings, and caps in a pot with enough water to cover.
- Boil for 5 minutes.
- Wash the top of the formula can, then open.
- Add formula for one feeding to each clean bottle.
- Put clean nipple upside down on each bottle and cover with a cap and screw on ring.

Storing Formulas and Expressed Breast Milk:

- Refrigerate prepared bottles of formula for up to 24 hours.
- Opened cans of formula should be covered, refrigerated, and used within 48 hours.
- Expressed breast milk may be stored in the refrigerator or freezer in either sterilized bottles or disposable plastic nursing bags.
- Expressed breast milk will keep in the refrigerator for up to 48 hours or in the freezer for up to 2 weeks after the time it was collected. Be sure the milk is protected in an air-tight container while in the freezer. Once the milk is thawed, do not refreeze.
- Portions of breast milk or formula remaining in the bottle after a feeding should be discarded.

Warming Bottles:

- Warm bottles of breast milk, formula, or whole milk immediately before serving for those babies who prefer a warm bottle.
- To thaw frozen expressed breast milk, hold under cool water and then under warm water. Shake bottle gently to mix. Do not refreeze breast milk.
- Bottles may be warmed by setting in a bowl of warm water or by holding under warm tap water.
- **Do not use a microwave to warm bottles** because this practice is potentially dangerous. Liquid may become very hot when microwaved and get hotter after removing from the microwave oven even though the bottle feels cool. The hot liquid could seriously burn babies. Covered bottles, especially vacuum-sealed, metal-capped bottles of ready-to-feed formula, can explode when heated in a microwave.

Commercially Prepared Baby Foods

Commercially prepared baby foods are safe, sanitary, and nutritious.

Purchasing Baby Foods:

- Buy either baby food in a jar or dehydrated flakes.
- Buy only single-ingredient foods. Avoid combination foods or dinners because they generally have less nutritional value by weight than single-ingredient foods, and they usually cost more than if each item were purchased separately. Also, it is difficult to determine the amount of each component in combination foods and dinners and therefore difficult to credit towards meeting the meal pattern.
- Read the ingredient list on the food label and avoid those foods listing water as the first ingredient and those containing added fat, salt, and sugar. Also, choose foods without added fillers such as tapioca and modified food starch.
- Avoid desserts such as baby puddings, custards, and cobblers because they are high in sugar. Babies do not need added sugar and should have the opportunity to have naturally sweet foods such as fruit.
- For babies 6 to 12 months of age, choose baby foods that progress in texture, thickness, and lumpiness to challenge the baby to learn new mouth skills.

Serving Baby Food:

- Be sure the vacuum seal has not been broken before using. You should hear a pop when you open the jar.
- Do not use the baby food jar as a serving dish. Remove the amount you plan to feed the baby from the jar and put it in a dish for serving. If the spoon used for feeding is put back into the jar, the baby's saliva could cause subsequent contamination and spoil the remainder of the food for later use.
- Throw away any leftover food in the dish. Do not put it back into the jar because it could cause contamination.
- Once the jar is opened, store it in the refrigerator and use the food within 2 to 3 days.

Food for the Older Baby

Most commercial baby foods lack enough texture for the baby who is 8 months of age and older. When preparing food for the older baby, you can use the same food prepared for an older child and modify the texture for the baby's stage of development.

Preparing Food:

- Make sure your hands, utensils, work space, and the food are all very clean.
- Begin with good quality food. Use fresh food whenever possible.
- Remove skin, pits, and seeds from fruit and some vegetables. Cut away all fat, gristle, skin, and bones from meat, poultry, and fish.
- Cook foods without added seasoning until they are soft and tender. Fruits and vegetables can be steamed to minimize vitamin loss. Meats can be roasted, broiled, simmered, or braised.
- Modify the texture by mashing with a fork, chopping, or grinding with a baby food grinder or food mill.

Cooked dry beans and peas may be served as a meat alternate. You may use any cooked dry beans or peas such as kidney beans, lima beans, pinto beans, or chick peas. Serve small quantities at first, and do not serve them every day. As with any food, if a baby does not like them or appears to have difficulty digesting them, they should not be served. To increase the protein value, serve the beans or peas at the same meal with a grain product, such as infant cereal, or additional foods such as dry bread, toast, noodles, or rice. To prepare dry beans and peas:

- Rinse to remove dirt and pick out any stems or stones.
- Put in a large pot and add enough water to cover them.
- Soak for 6 to 8 hours in the refrigerator

  or

  Bring to a boil, cover, remove from heat, and soak for 1 to 2 hours.
- Drain and rinse.
- Add fresh water and cook until soft (about 1 to 2 hours).
- Mash or puree with cooking liquid, formula, or milk.

High-nitrate vegetables such as beets, carrots, collard greens, spinach, and turnips should not be fed to babies in large quantities. The naturally occurring nitrates in these vegetables can be converted to nitrites. The nitrites bind the iron in the blood and make it difficult to carry oxygen. A condition called methemoglobinemia results, characterized by blue skin and difficulty in breathing. You can prevent this condition by limiting the serving size of these vegetables to 1-2 tablespoons per feeding.

Choking Prevention

Certain eating behaviors increase a baby's risk of choking on food and must be avoided. These include:

- Propping a bottle in the baby's mouth,
- Giving the baby a bottle with a nipple that has too large a hole,
- Feeding solid foods to a baby before the baby is developmentally ready,
- Feeding the baby too quickly,
- Feeding while the baby is lying down, walking, talking, crying, laughing, or playing,
- Serving difficult-to-chew foods to babies with poor chewing and swallowing abilities,
- Feeding the older baby without close supervision, and
- Feeding foods that may cause choking.

Many of the foods associated with choking are well liked by babies and young children. These include hot dogs, grapes, peanuts, raisins and other dried fruit, hard candy, popcorn, peanut butter, nuts and seeds, tough meat, raw carrots, and potato or corn chips. These foods are hard to control in the mouth, and they can slip down the throat before being chewed properly. You can lower a baby's risk of choking on food by taking the proper precautions. When preparing food for babies, make sure it is in a form that does not require much chewing.

The following preventive preparation techniques are recommended:

- Cook foods until soft enough to easily pierce with a fork.
- Cut foods into small pieces or thin slices that can easily be chewed.
- Cut round foods, like hot dogs or cooked carrots, into short strips rather than round pieces.
- Cut grapes in quarters.
- Grind or mash and moisten food for young babies.
- Remove all bones from poultry and meat and especially from fish.
- Remove pits and seeds from fruit.
- Substitute foods that may cause choking with a safe substitute, such as thinly sliced meat or hamburger for hot dogs.
- Avoid nuts or seeds (such as sunflower or pumpkin), unless ground finely or chopped.
- Avoid peanut butter and other nut or seed butters.

When serving food to babies, keep in mind the following:

- Supervise mealtimes and snacks. Do not leave babies alone when they are eating.
- Have babies sit still and in an upright position during meals.
- Encourage babies to eat slowly.
- Feed small portions.
- Hold babies while giving them a bottle.
- Make sure the hole in the nipple of the baby's bottle is not too large.
- Serve foods that are the appropriate texture for the baby's development.
- Avoid using teething pain relief medicine before mealtime since it may interfere with chewing.

Remember, choking can occur anywhere and anytime there is food. Avoid those foods known to be a risk or modify them to make them safer. Closely supervise mealtimes and encourage babies to eat their meals sitting quietly. Meals can continue to be both a happy time and a safe time.

For More Information:

See appendix E, "You Can Help Prevent Choking" and appendix F, "What Can You Do When a Child Is Choking?"

Write to the Nutrition and Technical Services Division, Food and Nutrition Service, for a copy of the Nutrition Update, "Choking on Food by Young Children."

Nutrition and Technical Services Division
Food and Nutrition Service, USDA
3101 Park Center Drive
Alexandria, VA 22302

Contact your local chapter of the American Heart Association, American Lung Association, and the American Red Cross for pamphlets, posters, and classes in emergency techniques for choking.

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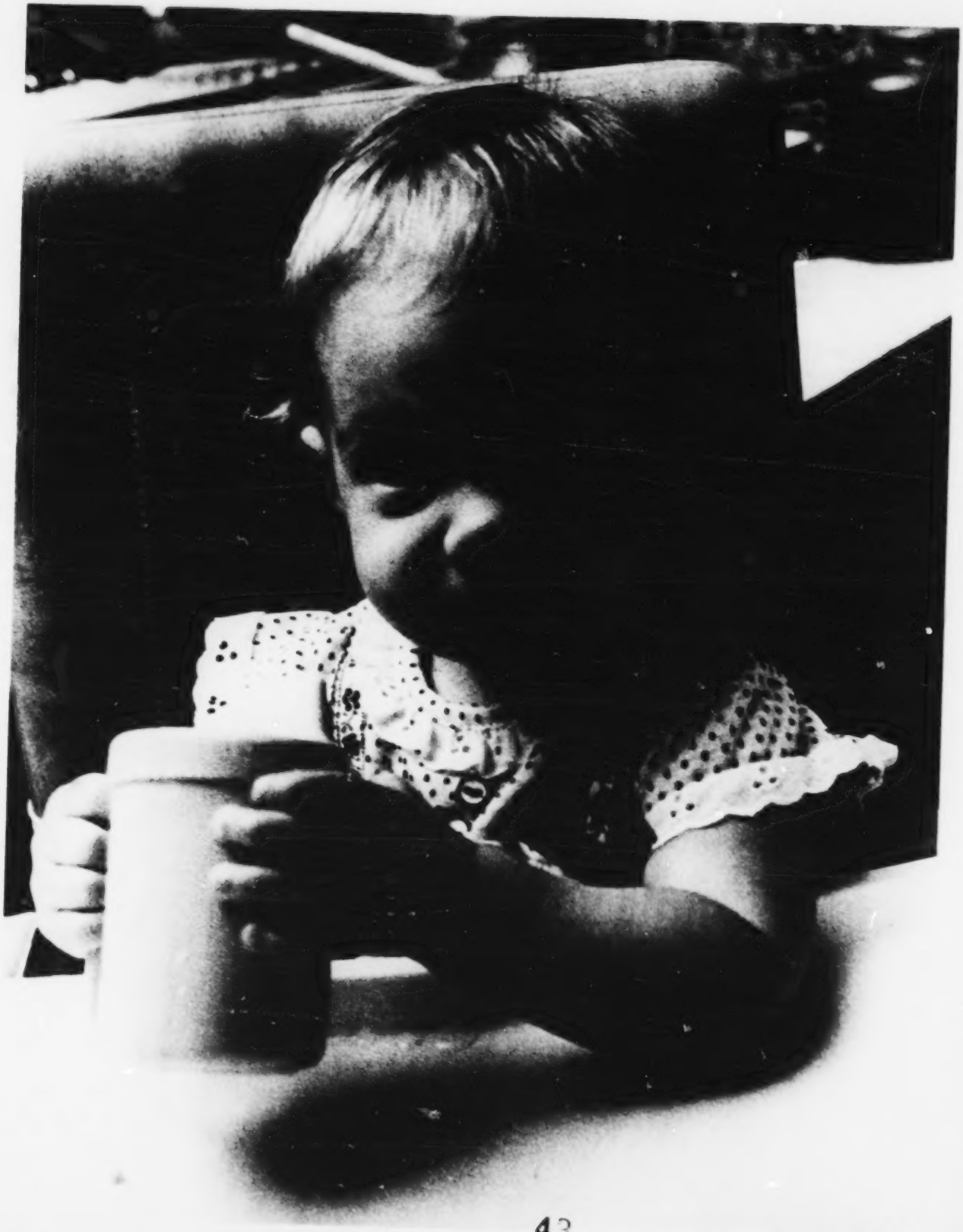

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Appendix A

Feeding the Baby for the First Year

Babies grow quickly during the first year of life and make many changes in the ***types*** *of foods and* ***textures*** *of foods they are able to eat.*

As babies grow and develop, watch for the following signs which will tell you when they are ready for a new food.

WHEN BABIES CAN:

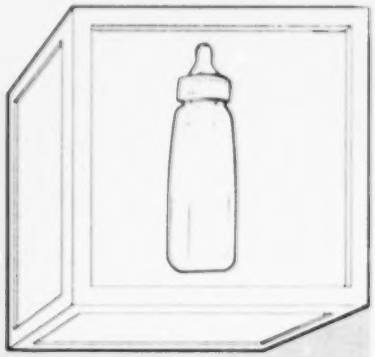
Only suck and swallow

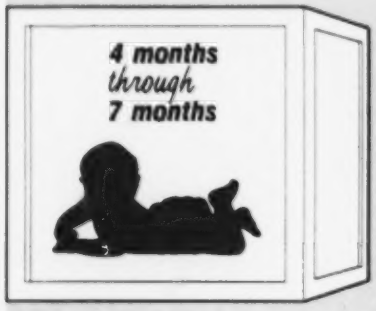
SERVE:

LIQUIDS ONLY

Breast milk

Infant formula with iron





Draw in lower lip as spoon is removed from mouth

Move tongue up and down

Sit up with support

Swallow semisolid foods without choking

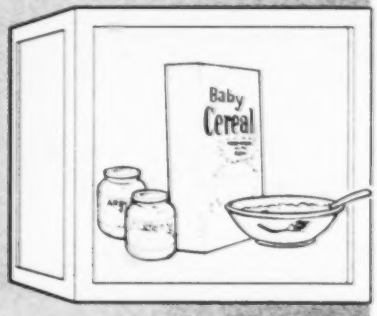
Open the mouth when they see food

ADD SEMISOLID FOODS

Infant cereal with iron

Strained squash, green beans, and other vegetables

Strained peaches, applesauce, and other fruit



Move tongue from side to side

Begin spoon feeding themselves with help

Begin to chew and have some teeth

Begin to hold food and use their fingers to feed themselves

Drink from a cup with help

ADD MODIFIED TABLE FOODS

Mashed or diced fruit

Mashed or soft cooked vegetables

Mashed egg yolk

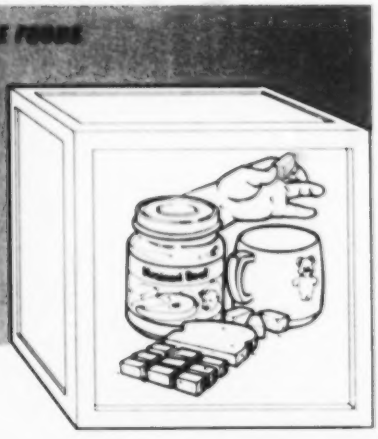
Strained meat/poultry

Cottage cheese or cheese cubes

Sliced bread

Crackers

Juice in a cup



Appendix B

Good Eating Habits Start Early

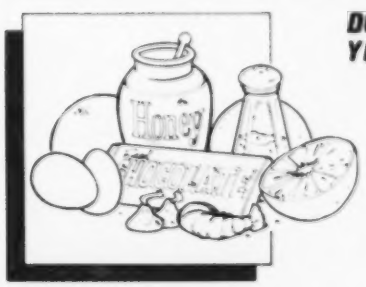
During a baby's first year, good nutrition and good eating habits will help the baby to grow up happy and healthy.

WHEN YOU BOTTLEFEED A BABY:

DO	WHY
Burp the baby during the middle and end of each feeding.	To reduce spitting up from swallowed air.
Put only formula, milk or water in the bottle. Do not put cereal or other food in the bottle.	To prevent overfeeding and to allow the baby to develop good eating habits.
Give the bottle to the baby before nap time, and do not let the baby go to sleep with the bottle.	To prevent choking and ear infection and to prevent dental decay from the milk which remains on the teeth.
Hold the baby while feeding instead of propping the bottle in the baby's mouth.	To prevent choking and to provide cuddling for the baby.

WHEN YOU FEED A BABY SOLID FOODS:

DO	WHY
Use a small spoon or let the baby use its fingers.	To help the baby learn proper eating habits.
Place food on the tip of the spoon and put food on the middle of the baby's tongue.	To make it easy for the baby to swallow.
Remove food from the jar before feeding. Do not feed the baby food from the jar.	To prevent the saliva from the baby's mouth from spoiling the remainder of the food in the jar.
Give only one new food at a time, and wait 1 week before giving another new food.	To give the baby time to get used to each new flavor and texture, and to see if the baby is allergic to the new food.



DO NOT SERVE THESE FOODS TO A BABY DURING THE FIRST YEAR OF LIFE:

Chocolate, citrus fruits, cocoa, egg whites, or shellfish	They may cause allergies.
Honey	It may make the baby very sick.
Salt, fat, or seasoning	A baby does not need them and will not miss them.

Appendix C

Infant Formula Preparation Checklist for Ready-to-Feed Formula

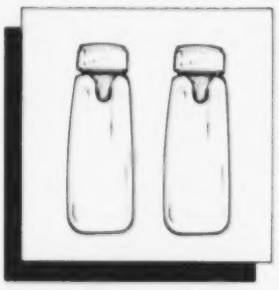
Wash your hands with soap and water.
Rinse thoroughly.

Wash the top of the formula can before opening it.

Wash the bottles, caps, nipples, and rings in soapy water.
Rinse thoroughly.

Pour the amount of ready-to-feed formula for one feeding into each of the clean bottles.

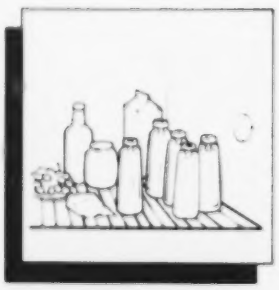
Squeeze water through nipple holes to be sure they are open.



Put a clean nipple upside down on each bottle and cover it with a cap and screw-on ring.

Put the bottles, nipples, caps, and rings in a pot with water to cover.

Put the pot over heat, and boil for 5 minutes.



Refrigerate until feeding time.

Appendix D

Safe Food Handling

Keep the baby's food clean to keep it safe.

Remember to wash your hands:

- ☐ with warm, soapy water.
- ☐ before fixing the baby's food.
- ☐ before feeding the baby.
- ☐ after changing the baby's diaper.

When you serve the baby's food:

- ☐ Wash the jar of baby food before opening.
- ☐ Make sure the jar is sealed. You should hear a pop when you open the lid of the jar.
- ☐ Remove enough food from the jar for one feeding and place in a dish to feed the baby to prevent the baby's saliva on the spoon from spoiling the remainder of the food in the jar.
- ☐ Cover the jar with the lid and place it in the refrigerator for no more than 3 days.
- ☐ Throw away any leftover food in the dish. Do not put it back into the jar.

When you fix the baby's food:

- ☐ Wash all bowls, spoons, forks, knives, the sink, and counters in hot, soapy water and rinse.
- ☐ Make sure the food is clean.
- ☐ Do not put the spoon used to taste the food back into the food because your saliva on the spoon will spoil the food.

Appendix E

You Can Help Prevent Choking

Young children are at the highest risk of choking on food and remain at high risk until they can chew better. Choking kills more young children than any other home accident. How can you make eating safer for young children?

WATCH CHILDREN DURING MEALS AND SNACKS TO MAKE SURE THEY:

- ☐ Sit quietly.
- ☐ Eat slowly.
- ☐ Chew food well before swallowing.
- ☐ Eat small portions at one time.

FIX TABLE FOODS SO THEY ARE EASY TO CHEW:

- ☐ Grind up tough foods.
- ☐ Cut food into small pieces or thin slices.
- ☐ Cut round foods, like hotdogs, into short strips rather than round pieces.
- ☐ Take out all bones from fish, chicken, and meat.
- ☐ Cook food until it is soft.
- ☐ Take out seeds and pits from fruit.

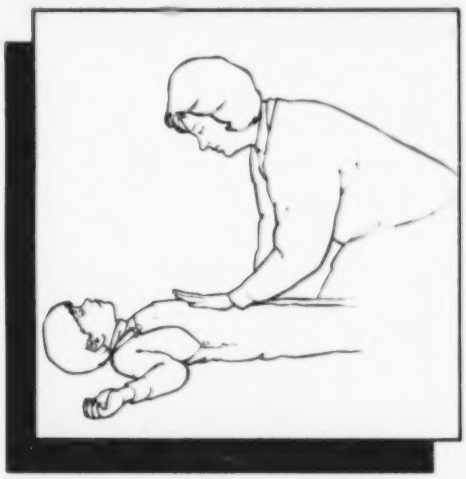
The foods which are popular with young children are often the ones which have caused choking.

FOODS THAT MAY CAUSE CHOKING:

- ☐ Firm, smooth, or slippery foods that slide down the throat before chewing, like:
  - hotdogs
  - peanuts
  - hard candy
  - grapes
- ☐ Small, dry, or hard foods that are difficult to chew and easy to swallow whole, like:
  - popcorn
  - nuts and seeds
  - potato and corn chips
  - small pieces of raw carrots
- ☐ Sticky or tough foods that do not break apart easily and are hard to remove from the airway like:
  - peanut butter
  - raisins and other dried fruit
  - tough meat

Appendix F

What Can You Do When A Child Is Choking?



If a child is choking but *CAN BREATHE*

Call the rescue squad and until help comes:

- ☐ Keep the child calm.
- ☐ Have the child sit down and cough.
- ☐ Do not slap the child on the back.
- ☐ Do not give the child a drink.
- ☐ Do not hold the child upside down.

If a child is choking but *CANNOT BREATHE, COUGH, SPEAK, OR CRY*

Call the rescue squad and until help comes:

☐ For an **infant who is conscious**

1. Place the infant face down on your arm, supported by your thigh, and tilt the head towards the floor.
2. Give four back blows between the shoulder blades with the heel of your hand.

If the object does not come out:

3. Sandwich the infant between your forearms and hands, and turn the infant on its back. Place your arm on your thigh for support, tilting the infant's head towards the floor.
4. Place two fingers on the infant's chest one finger's width below an imaginary line running between the infant's nipples. If you feel the notch at the end of the ribs you are too low and should move your fingers up slightly. DO NOT PUSH ON THE LOWER STOMACH OF AN INFANT.
5. Press four times on infant's chest.
6. Repeat if necessary.

☐ For a **young child who is conscious**

1. Lay the child on the floor on its back. Kneel at the child's feet.
2. Place the heel of your hand on the child's stomach, just above the navel and well below the rib cage. DO NOT PRESS YOUR FINGERS ON THE CHILD'S RIBS.
3. Press rapidly in and up 6 to 10 times.
4. Repeat if necessary.

☐ For an **infant or young child who becomes unconscious**

1. Open the mouth and look for the object. **If you can see it,** remove it by doing a finger sweep with your little finger.
2. Give two slow breaths to the infant or young child.
3. Repeat the steps given above for a conscious infant or young child if necessary.

THE INFANT OR CHILD NEEDS TO SEE A DOCTOR, EVEN WHEN BREATHING RETURNS.

Everyone should learn how to do these steps to stop choking. Call your local American Red Cross chapter for more information and for first aid training.

DO NOT PRACTICE ON PEOPLE.

Appendix G

Questions and Answers on the Infant Meal Pattern for the Child Care Food Program

Q ***Must a young infant eat at only the specified meal times?***

A The meal pattern states breakfast, lunch, supper, and snack but that is only a guideline. Young babies may need to eat every 2 to 4 hours. Older babies may also need to eat more frequently than the specified times. When babies are hungry, give them part of their next feeding.

Q ***How can you serve "0" tablespoons of food?***

A Certain foods are listed as "0" tablespoons to let you know that the food is optional and should be served at your discretion. Also, you may serve less than 1 tablespoon of those foods.

Q ***Why are some of the food portions so small?***

A The portions listed are the *minimum* amounts which meet the requirements. You may serve larger portions to those babies who would like more.

Q ***Why is fruit juice no longer required as an option at breakfast, lunch, and supper?***

A The use of fruit juice, in addition to the required amount of formula or milk at each meal, would amount to too much liquid and could discourage the baby from eating solids.

Q ***Why is fruit juice no longer included in the 4- through 7-month age group?***

A Fruit juice should be provided in a cup, not in a bottle, to avoid baby bottle tooth decay. By 8 months of age, most babies can begin to drink from a cup. Fruit juice may be served as an *additional* food before 8 months of age to babies who are able to drink juice from a cup.

Q ***Can whole milk be served to all infants 8 months of age and older?***

A *No.* Whole milk may only be served when babies are eating a wide variety of soild foods that include foods high in vitamin C and iron.

Q ***Can low-fat or skim milk be served?***

A *No.* Only whole milk may be served to make sure babies get enough fat and not too much protein.

Q ***Which infant formulas can be served?***

A All infant formulas, including soy-based formulas, may be served as long as they are *iron-fortified* and served according to the directions on the label.

Q ***Which baby foods are allowed?***

A Baby foods in a jar or dehydrated flakes are allowed as long as they are single fruits, vegetables, or meats. Desserts, combination foods, and dinners are not allowed since it is difficult to determine the amount of each component in them. Also, the nutritional quality of the mixed foods is usually less than that of single foods.

Continued on next page

Q ***Are adult cereals, like Cheerios, allowed?***

A Only iron-fortified *infant* cereals meet the cereal requirement. Adult cereals like Cheerios may be served as additional foods.

Q ***Which cooked dry beans or peas are allowed?***

A You may serve any cooked beans or peas such as kidney beans, lima beans, or chickpeas. You may use either those that are dry or those already cooked and in a can. Mash or puree them to the right consistency.

☆ U.S.G.P.O. 1989- 619-462

READER RESPONSE

Feeding Infants: A Guide for Use in the Child Care Food Program

Please complete this form, tear it out, fold, seal it with tape, and mail it. Although not mandatory, your response will help us evaluate the usefulness of this guide.

	Information Is Useful/Clear	Information Is Not Useful/Clear	More Information Is Needed
Infant Development and Feeding Skills			
Child Care Food Program Infant Meal Pattern			
Feeding by Bottle			
Feeding of Solid Foods			
Drinking From a Cup			
Sanitation, Food Preparation, and Safe Food Handling			
Bibliography			
Appendix: Handouts			
Figures: Handouts			

Are you planning to reproduce the handouts: Appendix ☐ yes ☐ no

Figures ☐ yes ☐ no

If yes, how will you use the handouts?

☐ As part of a training session ☐ To be distributed to family day care home providers

☐ To be distributed to parents ☐ Posted for easy reference

☐ Other (please describe) _____

Please include other comments on this guide:

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